Thirty years on, 'spaceman' Roberta Bondar is still flying high

National Post (f/k/a The Financial Post) (Canada)

January 19, 2022 Wednesday

Web Edition

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Section: CULTURE

Length: 2508 words

Byline: Chris Knight, Chris Knight

Body

In space, no one can hear the birds.

When Sault Ste. Marie's Roberta Bondar rocketed into orbit 30 years ago this month aboard the space shuttle Discovery, she brought along her love of music in the form of recordings. "I asked Anne Murray and Tommy Hunter for a tape of their music," she recalls. An aunt who had studied at the Detroit Conservatory was part of the mix. And she arranged for fellow Saultite Lyndon Slewidge to record the national anthem. (He would later become the official anthem singer for the Ottawa Senators.)

"It was important for me to hear those things when I was floating over Canada," she says. "I wasn't listening to them when I was elsewhere in the world. I was listening to them as soon as we crossed Canada. I was listening to these wonderful sounds that were made by my family and by Canadians that I knew. It was Canada for me."

Music had long been part of the Bondar family - she recalls an uncle on her father's side who worked in the steel plant in the Soo but also played the violin. "But as a neurologist I know how important music is for memories and for embedding memories," she says. The right song can be a time machine, recalling joyous events or making the listener melancholy and reflective.

But something was lacking in orbit. "Sure I took up the organ playing ... and the singing, but there was no birdsong or birdsound. That's what I missed in space." Think about watching footage of a space flight. You hear rockets, the flow of oxygen, various human and mechanical noises. "But when there's shots of the Earth you don't hear the Earth. And that's the difference."

That sensory absence may go some way toward explaining one of Bondar's many current passions. As head of the not-for-profit Roberta Bondar Foundation, she has spent much time and energy researching various endangered bird species, aiming to understand their habitats and help conservation efforts.

The program is called Space for Birds, although it also goes by the name AMASS, short for Avian Migration - Aerial, Surface and Space. (Space programs love their acronyms, and you can take the astronaut out of NASA, but ...)

Several species, including the whooping crane and the curlew sandpiper, have been photographed (often by Bondar herself) on the ground and from planes and helicopters. But these images of breeding and overwintering areas and migratory corridors are supplemented by pictures taken by astronauts aboard the International Space Station, at the request of Bondar. Friends in high places, indeed!

When I connect with Bondar in her Toronto home over a Zoom call, I notice that her background is an image of the Earth from space. At first I take this to be a random shot chosen to represent her credentials as Canada's first

female astronaut, not to mention the first neurologist in space. But when I remark on it she points out that it's an image of Nova Scotia's Kejimkujik National Park, home to the sandpiper-like (and very cute) piping plover.

As a consultant, public speaker, frequent elementary school guest and lecturer, Bondar can hold forth for as long as you'd like on matters avian, conservational, neurological or photographical. But of course I also want to know about those eight days, 4.7 million kilometres and 129 orbits that began on Jan. 22, 1992, with the shuttle Discovery lifting off from pad 39A at the Kennedy Space Center. It was the same spot from where Apollo 11 had leaped to the moon, 23 years earlier.

"Through the 30-year lens things do take a different shape," she recalls. "Some things that were really important to me at the time are maybe now on reflection not so important. The highlight of my flight was basically seeing the Earth as a planet, which is a reality moment that I would not give up. That's what I remember most, is the reality of it."

She compares the experience with meeting someone famous, like Queen Elizabeth or Wayne Gretzky. (Or Roberta Bondar, I can't help thinking.) "This person becomes a living, breathing thing in front of you in three dimensions," she says. "Maybe you don't want to escape that moment, but sometimes you just can't escape that moment.

"And it's that emotion over a period of time that I think I respect more and more, and what a unique opportunity it was. And why I was really happy to have been as prepared as I was, mentally and emotionally, to view the Earth. That was one of my main personal goals when I went to space, and it's allowed me to carry on with my work here on Earth."

Roberta Bondar, with pilot Stephen S. Oswald, spent eight days on Discovery in 1992. "My research work in space medicine made me understand that we need more than a space station to do it," she says. "We need to have a foot on some kind of ground..."

She was educationally prepared as well. As a girl of eight, Bondar already had dreams of being a "spaceman," as she said at the time. By the time Apollo 11 launched, she held a Bachelor of Science in zoology and agriculture from the University of Guelph, and was midway through her Master of Science in experimental pathology from Western. She later topped that with a Doctor of Philosophy in neuroscience from the University of Toronto, and a Doctor of Medicine from McMaster.

"All of those things positioned my brain to be able to look at this depth of detail and try to bring it home, and I couldn't do that all at once," she says. "It has taken me to today at least, and it will take me to the future, to try to put this in words, to try to use my photography to share this."

But ultimately, what comes down must go up. "I've always believed that we take our Earth biases into space with us," says Bondar. "If people go up with blinders on or have one way of thinking about things, then they really aren't open to changing something about themselves."

She hopes she brought a little perspective with her, something she's discussed with friend and fellow astronaut Marsha Ivins, a veteran of five shuttle missions between 1990 and 2001.

"The two of us had a much more open view," she says. "OK, I'm wide open to this. Let me see something so I can try to bring it in and - not recreate myself but think differently about something. Can I change my perspective?

"When I came back to the planet I was deeply moved by the realities I mentioned earlier. I'm enamoured of these oblique views of the Earth's limb, the edge. And then beyond it's a chasm into something that's unimaginable, black that's so deep that your eyes, your visual system, is incapable of even penetrating." You come away with an understanding of the fragility of being a human being on this massive planet, she says. "I couldn't help but be more environmentally conscious."

Climate change is a big topic these days, from November's COP26 conference in Glasgow, to the recent news from The New York Times that 2021 was a record-breaking year of record-breaking weather, be it heat domes, cold

snaps, floods, droughts or out-of-season tornadoes. I'm curious to hear what Bondar has to say on the subject, but also anxious about her take on it. Will she pronounce us doomed?

"I don't want to always look into the darkness of space," she says carefully. "I like to look at the brightness of the sun reflecting off our planet as though it is hope that we see around us. Although we've engineered some of the difficulties that we're facing, we can also engineer the solutions."

She likens the situation to the flight of Apollo 13, when an explosion damaged the spacecraft, and engineers and astronauts had to devise solutions for problems they hadn't even considered or trained for.

"Start looking at it as an Apollo 13 kind of thing," she counsels. "What tools do we have now that we can use? What in the best scenario do we need in order to be able to deal with all of these things? And one of them is education, obviously. People have to have some basic building blocks before they're able to go and do great things. We need to provide the energy for education. We need to provide the inspiration for people to solve these issues."

And while climate change caused by humans may be new, it's worth remembering that our species has weathered extreme weather in the past. "We do know there was an ice age over 10,000 years ago, and if people think the Earth is a quiescent place - well, maybe it's quiescent in their own lifetime."

She adds: "My small role in this is really dealing toward the education and documentation. And that's what I've been trying to do with the conservation work through the foundation. I do believe that if you love something, you'll protect it."

A common question fielded by astronauts is whether they'd ever want to return to space. Bondar's answer surprises me.

"Not to space station," she says firmly. "My research work in space medicine made me understand that we need more than a space station to do it. We need to have a foot on some kind of ground, regardless if it's one-sixth g on the moon or one-third g on Mars. I really felt we should go [back] to the moon right from the space shuttle. In fact I never thought the Apollo program should be cancelled, but there's politics and everything."

But she'd be keen to be part of the next lunar mission. "There's so much to discover on the moon, and as astronauts we really want to discover stuff. We want to explore. It's not necessarily being in a spaceship all the time. It's being on the surface of something. Which is why I like being here, because I'm on the surface of a planet."

And she's cautiously optimistic about the burgeoning field of space tourism, even as she denounces "people who are going up to just play skittles."

William Shatner seemed like he might be the skittles type, treating his sub-orbital flight last year as little more than something to post on FaceBook. But something clearly happened to him during those few minutes at the edge of space. Bondar notes that when he emerged from the capsule he seemed awestruck, grasping for words.

"Shatner starts talking about the thin blue part of the atmosphere and how this was all that's protecting the Earth, and he was really quite eloquent. But what did [Jeff] Bezos do? Right in the middle of these beautiful words from Shatner ... Bezos turns around to get a bottle of Champagne so he can ... spray it over everybody."

That said: "The technology that is being developed ... I must say is intriguing."

It can be exhausting to consider a list of Bondar's achievements, even during those brief eights days in space. The flight was originally supposed to last two weeks, so the seven astronauts, including Germany's Ulf Merbold from the European Space Agency, split themselves into two teams to perform round-the-clock science, all hands on deck. They studied materials processing in microgravity, as well as performing a host of biological experiments, including the effects of microgravity on cells, viruses, plant and animal life, and of course the human body. The crew grew superconductor crystals from organic compounds, monitored their radiation exposure, tested their vestibular responses and sensory perception, and shot footage for the Imax documentary Destiny in Space.

"There's lots of stuff that we don't know about the human body that spaceflight gives us the opportunity to view for the absolute first time ever," says Bondar. "And you can't do this experiment on the ground." For example, it was long thought that blood is distributed in the lungs in a certain way because of the effects of gravity. But take gravity away and the blood stays put. There has to be a different reason.

And despite the busy schedule, Bondar even managed to find time for a little performance art, a one-woman salute to one of her favourite movies, 2001: A Space Odyssey. In 2017 she told the CBC that one day while changing aboard Discovery, she pulled a curtain around her for privacy and then tucked her naked body into a ball in front of one of the ship's windows, floating and rotating slowly above the Earth like the star child in the final scene of that movie. "My homage to Arthur C. Clarke," she called it.

Bondar turned 76 in December but still keeps an active calendar. Recently she's been sitting on my side of the microphone, interviewing fellow Canadian polymaths for a podcast called Sharing Space with Roberta Bondar, a series she says is for "those who wander and those who wonder."

Episodes include chats with fellow astronaut/doctor David Saint-Jacques, singer/songwriters Anne Murray and Buffy Sainte-Marie, CBC journalist Michael Serapio, and physician and Olympic hockey medalist Hayley Wickenheiser. It explains why Bondar started our own chat with several questions for me, before apologizing: "It's your interview, not mine."

One of my questions had to do with philosophy rather than science or medicine. Orbiting the Earth, astronauts see the sun rise every 90 minutes - an eight-day journey represents several months' worth of sunrises. Does she prefer the view from orbit, or down on the ground?

"The sunrise on Earth is much longer," she replies. "The sunrise from space, it's just there and it's gone. It's basically much better when you look at the images after. On the Earth you can savour that longer."

At top, the Athabasca Delta, Wood Buffalo National Park, Alberta and Northwest Territories. Middle, Blue Haiku, Kouchibouguac National Park, New Brunswick. Bottom, Lake Huron shoreline in the Bruce Peninsula, Ontario.

But as a photographer she likes sunsets, both on- and off-world, because you can see them coming and get your camera ready. "Sunsets have a much more emotional appeal," she adds. "And then you get the stars, so there's a whole new world out there after. There's a promise."

I'm also curious if she tires of the astronaut label, which will forever be foremost in any description of her, no matter her myriad other accomplishments. (Order of Ontario and of Canada, dozens of honorary degrees, star on Canada's Walk of Fame, induction in the Canadian Medical Hall of Fame, namesake of several schools and at least one observatory, etc.)

"Being an astronaut has given me a profile and being the first Canadian woman in space has given me a profile," she says. "I can reach a much greater group of individuals and cultures than if I had maintained a more narrow focus. One has to keep that going. It's a privilege, a responsibility that I take deeply."

And while she maintains that she's Roberta first, astronaut Bondar second, she's the first to admit that the two have been intricately bound over the years.

"It changed the way that I approach other individuals, that I approach life on this planet. For me it was a unique moment, and it has framed the way I frame my life and how I view the Earth and our human species."

The Roberta Bondar Foundation is hosting an online celebration of the anniversary of her spaceflight on Jan. 22. Tickets and more information at eventbrite.ca/e/an-evening-with-dr-roberta-bondar-friends-30th-anniversary-celebration-tickets-166517455191. You can hear Bondar's podcast at robertabondar.com. !@COPYRIGHT=© 2022 Postmedia Network Inc. All rights reserved.

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Load-Date: January 19, 2022

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